5407170 Issue 6 Aug. 2006

Hotpoint Aquarius Washer Dryers

Models	Commercial Code
WD420P	31127
WD420G	31128
WD420T	31126
WD440P	34189
WD440G	36234

Service Information

Indesit Company UK Ltd

SAFETY NOTES & GENERAL SERVICING ADVICE

1. This manual is NOT intended as a comprehensive repair/maintenance guide to the appliance.
2. It should ONLY be used by suitably qualified persons having technical competence applicable product knowledge and suitable tools and test equipment.
3. Servicing of electrical appliances must be undertaken with the appliance disconnected (unplugged) from the electrical supply.
4. Servicing must be preceded by Earth Continuity and Insulation Resistance checks.
5. Personal safety precautions must be taken to protect against accidents caused by sharp edges on metal and plastic parts.
6. After servicing the appliance must be rechecked for Electrical Safety. In the case of appliances which are connected to a water supply (i.e.: Washing Machines, Dishwashers & Food Centres etc.) checks must be made for leaks from seals gaskets and pipe work and rectification carried out where necessary.
7. It can be dangerous to attempt 'DIY' repairs / maintenance on complex equipment and the Company recommends that any problem with the appliance is referred to its own Service Organisation.
8. Whilst the Company has endeavoured to ensure the accuracy of the data within this publication they cannot hold themselves responsible for any inconvenience or loss occasioned by any error within.

MANUFACTURING DATE CODE REFERENCE CHART

	1986 1994 2002	1987 1995 2003	1988 1996 2004	1989 1997 2005	1990 1998 2006	1991 1999 2007	1992 2000 2008	1993 2001 2009
Jan	01	13	25	37	49	61	73	85
Feb	02	14	26	38	50	62	74	86
March	03	15	27	39	51	63	75	87
April	04	16	28	40	52	64	76	88
May	05	17	29	41	53	65	77	89
June	06	18	30	42	54	66	78	90
July	07	19	31	43	55	67	79	91
Aug	08	20	32	44	56	68	80	92
Sept	09	21	33	45	57	69	81	93
Oct	10	22	34	46	58	70	82	94
Nov	11	23	35	47	59	71	83	95
Dec	12	24	36	48	60	72	84	96

First 2 digits of the serial number indicate production date

Date Code — (**27**)120054

This example shows that the machine was manufactured in MARCH 2004.

SERIAL NUMBER / INDUSTRIAL CODE EXPLANATION

Serial Number Example

3 10 02 0895

- **Four remaining digits =** Build number that day 895th built
- **Third two digits** = Day of manufacture 2nd of month
- **Second two digits** = Month of manufacture October
- **First digit** = Year of manufacture 2003

Industrial Code Example

37 24455 0010

- **Last four digits =** 0000 original production. Other numbers denote major production changes
- **Second five digits** = COMMERCIAL CODE* * Vital for correct model information and system identification
- **First two digits** = Factory of origin

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DEVELOPMENT HISTORY

September 2004
Date Code 33 Aquarius versions WD420 enter full production.

November 2004
Date Code 35 WD440P - General tactical model, same as WD420 but with 1400 rpm spin.

February 2005
Date Code 38 WD440G first produced.

April 2005 Models WD420 & WD440
Date Code 40 Change to Cold Fill and deletion of heater box fluff filter.

On 25th April 2005 (Date Code 40), this range of washer dryers changed from Hot and Cold Fill to Cold Fill only. Along with this change a modification was made to the tumble dryer heater box assembly with the introduction of a straight heating element, this to improve the air flow through the heater box. This change enables the removal of the heater box fluff filter and deletion of the flushing valve and hose. The thermistor, one-shot cut out and fan assembly are not affected. The 4-way valve is replaced by a 3-way valve and the hot supply hose is deleted.

A new file setting (EEPROM) is used for cold fill machines, but the consumer programmes remain the same for both Hot and Cold and Cold fill machines. The changes to the heater box assembly does not effect the EEPROM file settings.

May 2006 Model WD420 & WD440
(**S/N 60508.0000**) Re-introduction of flushing valve style heater box assembly.

On 8 May 2006 (S/N 60508.0000), the flushing valve and fluff filter was re-introduced in production, along with spiral element, metal fan, externally mounted dryer motor and thermal fuse cable, which is attached to the heater box upper casing in place of the one shot cut-out device.

SPECIFICATIONS

Models Covered WD420 Washer Dryer
WD440 Washer Dryer

Colours P = Polar, G = Graphite, T = Sandstone

Dimensions Height 850 mm Width 595 mm
Depth 600 mm Weight 66 kg. Packed approx 69 kg

Country of Origin Great Britain

Electrical Supply 230 Volts AC @ 50Hz Fuse 13amp

Energy Energy Class: B

Washing Performance Class: A @ 40°C

Energy Consumption 1.02 KWh / Cycle @ 60°C Cotton

Water Consumption Washing Only = 55 Litres @ 60°C Cotton

Wash Load 6 kg Cottons

Washing & Drying Load 5.0 kg + 5.0 kg Cottons

Spin Speed WD420 - 1200 rpm maximum WD440 - 1400 rpm maximum

Control PCB 220/230Volt 50/60Hz Type Merloni EVO 2

Wash Heater 1800 Watts @ 230 volts Resistance 30 Ω approx.

Dryer Heater 1200 Watts @ 230 volts Resistance 43 Ω approx.

Thermistor NTC - Wash Resistance: 20 KΩ @ 20°C

Thermistor NTC - Dryer Resistance: 26 KΩ @ 20°C

Water Supply Hot & Cold Valves - Coil Resistance 3.8 KΩ
Max Pressure = 1 Mpa (10bar)
Minimum Pressure = 0.05 Mpa (0.5bar)

Motor - Wash Universal Series Wound 230V 50Hz AC with tapped field

Pins	Resistances	FHP	CESET
5-6	**Armature** Varies with brush-gear	1.5 Ω ± 8%	1.78 Ω ± 7%
3-4	**Full Field**	1.26 Ω ± 8%	1.25 Ω ± 7%
3-7	**Tapped Field**	0.47 Ω ± 10%	0.41 Ω ± 7%
1-2	**Tacho 16 Pole (8 pairs)**	135 Ω ± 10%	68.7 Ω ± 7%

Motor - Dryer Fan 230 Volt 50 Hz Resistance approx. 45 Ω

Pump 2 Pole Synchronous
220 / 240 Volt 25 Watt, Resistance = 165 Ω
Maximum Head 1.4 metres
Flow rate @ 0.9 metres / 30 Litres per minute

Door Lock P.T.C. Bimetallic - Time Delay approx 2 minutes

Torque Settings Outer Drum = 8Nm
Upper Balance Weight = 18 Nm
Lower Balance Weight = 24 Nm
Heater Box to Drum = 12Nm
Heater Box Top to Bottom = 8Nm

INSTALLATION

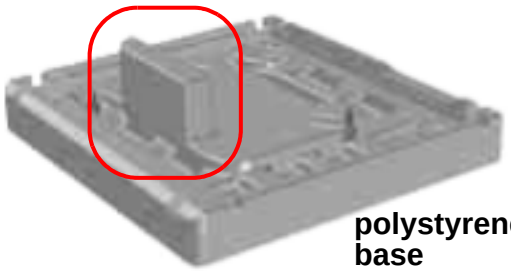
Unpacking

1. Unpack the washing machine.
2. Check whether the washing machine has been damaged during transport. If this is the case, do not install it.

Remove the polystyrene base

The vertical block part of the base (see below) should have stayed intact when the base was removed. If it has broken off and is still inside the machine, carefully lay the machine on its side, onto the polystyrene top cap and then remove the block.

Vertical block



polystyrene base

Warning:

Packaging materials are not childrens toys.

Remove the transit fixings

Follow these instructions to remove the TWO transit fixings. IMPORTANT: Situated one either side of the rear panel, both transit bolts (complete with spacers) MUST be removed before use.

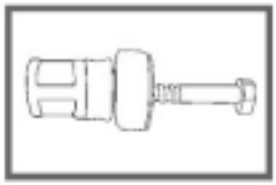
Failure to do so may cause damage to the machine!

1. Use a crosshead screwdriver to remove the plastic cover.

2. Unscrew the bolt using a 13 mm spanner.

3. STOP when 3 threads can be seen.

4. Hold, slide and pull to remove.



! It is important the transit bolt and spacer come out intact *(see image left)*.

For safety, replace both plastic covers over the holes left by removing the two bolts.

Levelling

1. Install the washing machine on a flat sturdy floor, without resting it up against walls, cabinets etc.
2. Compensate for any unevenness by tightening or loosening the adjustable front feet. The angle of inclination, measured according to the worktop must not exceed 2°.

Levelling the appliance correctly will provide it with stability and avoid any vibrations, noise and shifting during operation. If it is placed on a fitted or loose carpet, adjust the feet in such a way as to allow enough room for ventilation beneath the washing machine.

Connecting to the Water Supply

WARNINGS:
The temperature of the hot water supply should ideally be 60°C and no higher than 70°C as this could cause damage to the laundry and the machine. *Applies to products produced prior to Date Code 40.*

Do not connect the machine to a single outlet instantaneous water heater.

The hot and cold water pressure should be between 3 and 150 psi (21 - 1034 kPa). Incorrect pressures could lead to flooding.

The water supply taps should be accessible when the machine is installed.

Before connecting the fill hoses, check that water is running from the water supply taps you will use for the machine.

Connect the washing machine to the water supply using the fill hoses fitted to the machine.

Do not use old hoses.

Hot & Cold Fill - *Cold fill only from D.C. 40*

1 Unclip the grey and blue fill hoses from the back of the machine.

2 Connect the free end of the grey fill hose to the HOT water supply (see figure1). Connect the free end of the blue fill hose to the COLD water supply.

3 Turn on the water supply and check for leaks. If there is a leak, turn off the water supply, remove the connector and check that the sealing washer is in place.

Refit the connector and tighten it.

Turn on the water supply.

4 When moving the machine into its final position, make sure that the hoses are not trapped or kinked.

Fig. 1 **Fig. 2**

If the fill hoses are too short:

Longer fill hoses are available. Remove the existing fill hoses from the inlet valves on the back of the machine and fit the new longer fill hoses as shown above with the angled ends of the hoses connected to the machine (see Fig. 2).

If no hot water supply is available or the hot water pressure is low, a cold fill adaptor (Fig. 3) and fitting instructions are available. *Applies to products produced prior to D.C. 40.*

Electrical connections

Before plugging the appliance into the mains socket, make sure that:

- the socket is earthed and in compliance with the applicable law.

- the supply voltage is included within the values indicated in the Specifications page.

- the socket is compatible with the washing machines plug. If this is not the case, replace the socket or the plug.

Location

! The washing machine should not be installed in an outdoor environment, not even when the area is sheltered, because it may be very dangerous to leave it exposed to rain and thunderstorms.

! When the washing machine is installed, the mains socket must be within easy reach.

! Do not use extensions or multiple sockets.

! The power supply cable must never be bent or dangerously compressed.

! The power supply cable must only be replaced by an authorised engineer.

Drainage Connections

Take care when you remove the drain hose from the clips on the back of the machine. All machines are tested with water before they leave the factory so a small amount of water may still be in the hose.

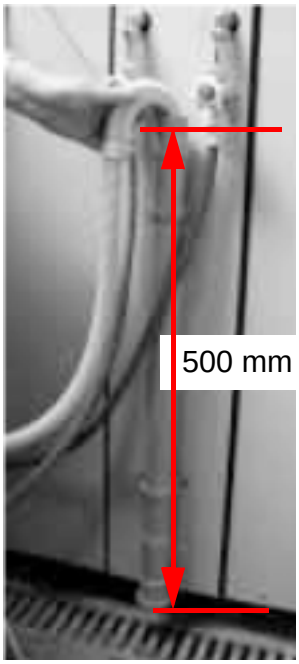
Do not remove the hooked end support from the GREY drainage hose when using any of the drainage methods detailed below. You may need to reposition it as required along the drainage hose.

For drainage into a standard work top sink, ensure the outlet pipe has a minimum diameter of 32 mm. If the sink is inset, the front edge of the basin must be less than 75 mm from the front edge of the worktop, so that the drain hose will hook securely into the sink.

Unclip the drainage hose from the back of the machine and hook over into the sink. Make sure that the sink is free of any obstructions and that the sink plug can not fall into the sink, preventing the water from draining away freely. Pumped out water may be very hot.

We recommend one of the following drainage methods:

Stand pipe Fig. 1



1 Make sure that the standpipe has a minimum diameter of 38 mm.

2 Remove the drainage hose from the clips on the back of the machine.

3 Make sure that the top of the standpipe is positioned at least 500 mm from the floor (see Fig.1).

Use the plumbing indicator line label on the back of the machine as a guide.

4 Place the drainage hose approximately 100 mm into the standpipe.

Under Sink Waste System

Fig.2

1 Cut out the membrane, bung or blanking plug (see Fig. 2).

2 Unclip the drainage hose from the back of the machine.

3 Move the hooked end support along the drainage hose as required.

Fig.3

Hose clip

4 Attach the drainage hose securely to the under sink drainage unit, using a hose clip (see Fig. 3).

5 Raise the hooked end support up to at least 800 mm to avoid water being drawn back into the machine.

Extending the drainage hose

If the GREY drainage hose is too short, a longer drainage hose is available from our Genuine Parts & Accessories Mail Order Hotline.

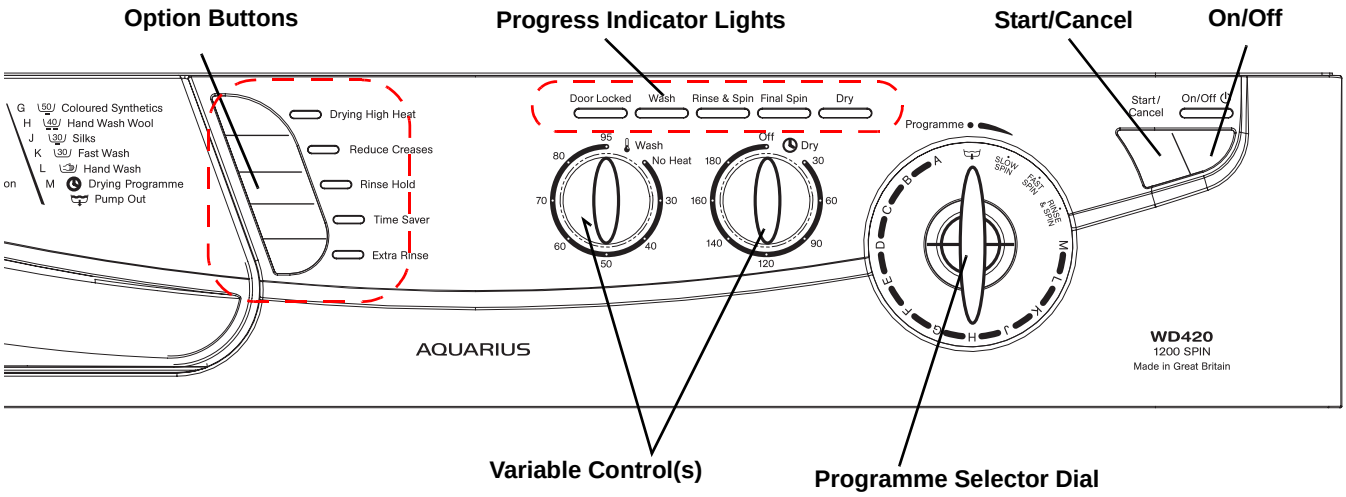
WARNING!

The company denies all liability if and when these warnings are not respected.

The first wash cycle

Once the appliance has been installed and before you use it for the first time, run a wash cycle without detergent and no laundry, setting the 90°C programme without a pre-wash cycle.

Controls



On-Off / Selecting a programme

The machine is switched on by pressing the 'On/Off' button for 2 seconds. All the indicator lights will light up for a few seconds and the 'Door Locked' indicator light will flash once.

Turn the programme selector dial to the desired programme. Load the laundry and detergent. Select the options you require.

Press the 'Start/Cancel' button for 2 seconds to start the programme.

To stop or change a programme

Press the 'Start/Cancel' button for 2 seconds.

Select 'Pump Out' on the programme selector dial.

When the machine has finished emptying, turn the programme selector dial to the new programme. Press the 'Start/Cancel' button to start the programme.

If you cancel a hot wash programme, take care when removing the laundry, it might still be very hot.

Progress indicator lights

These will light up when you choose a programme, to indicate the progress of the selected programme. When started, the first light in the cycle will stay lit and as the programme progresses, successive lights will come on until the programme finishes.

Door Locked indicator light

The ‘Door Locked’ indicator light will come on two seconds after you press the 'Start/Cancel' button and will stay lit throughout the programme. A short time after the programme has finished the indicator light will go out and you can then open the door.

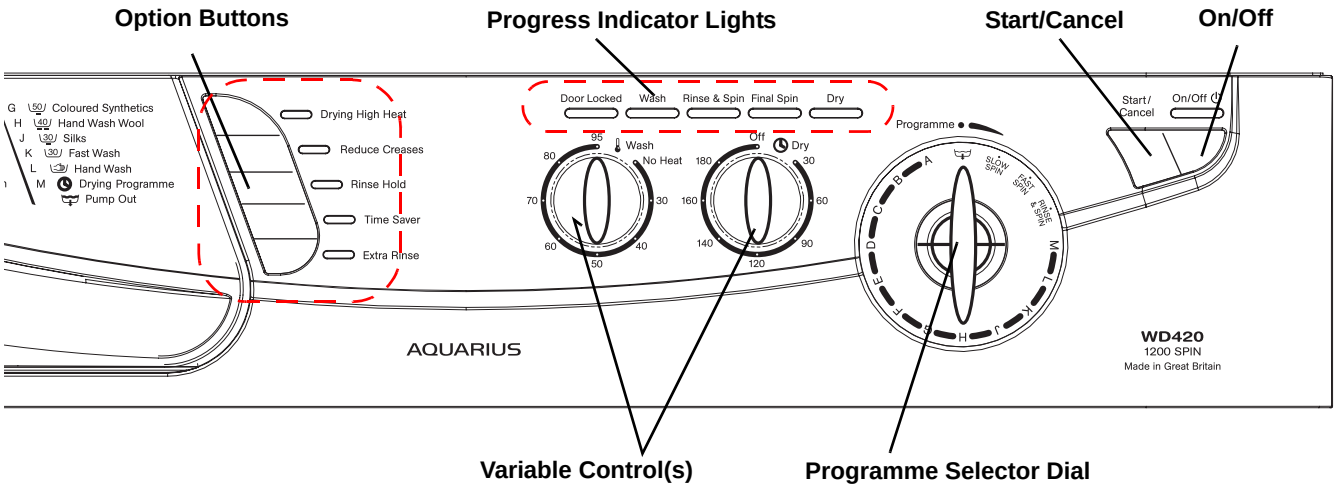
Selected programmes will not start if the door is not closed properly, the 'Door Locked' indicator light will flash to show this. Push the door shut until you hear the catch click.

Button Selection:

To select an option, press the button and you will see a light come on alongside the button.

Press again to cancel, and the light will go out.

Options



Options are selected by pressing the button and confirmed by illumination of the LED.

Drying High Heat

The default setting is LOW heat. By selecting this allows HIGH heat for tumble drying.

Reduced Creases

Changes wash action and slightly increases drum speed on cotton programmes and removes end of wash spin with a reduced speed on final spin on synthetic programmes.

Available on programmes C, E, G and Rinse and Spin programmes

Rinse Hold

Clothes will be suspended in cold water at the end of the final rinse. To complete the programme, press the button when the LED is flashing

This option is not available on programmes A, H, K, L and Spin only

Time Saver

Saves programme time by up to a third depending on programme selected and is achieved by reducing wash run times.

This option is only available on programmes B, D, G and H.

Extra Rinse

Adds an extra rinse to the programme

This option is not available on programmes A, E, H, J, K, L or Spin only

Variable Wash Temperature Control - Selected by Rotary Knob

Enables a lower wash temperature and No Heat to be selected

Note; if the dial is left at the maximum temperature setting the programme will be washed at the maximum temperature for the programme selected

Variable Tumble Drying Time - Selected by Rotary Knob

Enables the required drying time to be chosen.

Maximum 180 minutes plus 20 minutes Cool Tumble.

Wash Programmes

	Wash Label	Fabric	Temp °C	Max Dry weight load	Approx programme time	Spin Speed
A	P	Mixed Prewash	30	6kg	20 minutes	Slow
B	95	White Cotton & Linen without special finishes.	95	6kg	2 hours 30minutes	Fast
C	60	*Super Wash* White Cotton & Linen	60	6kg	2 hours 20minutes	Fast
D	60	Colourfast Cotton, Linen or Viscose without special finishes.	60	6kg	2 hours	Fast
E	60	*Fast Wash* Colourfast Cottons & Linen	60	5kg	1 hour	Fast
F	40	Colourfast Cottons, Linen & Viscose	40	6kg	1 hour 45minutes	Fast
G	50	Coloured Synthetics: coloured Nylon, Polyester, Acrylic and Cotton mixtures, Cotton or Viscose with special finishes, coloured Polyester and Cotton mixtures.	50	3kg	1 hour 10minutes	Slow
G	40	Acrylics: Set the wash temperature to 40C using the Variable Temperature dial. Acrylics and tri-acetate blendsof these fabrics with Wool, Polyester and Wool blends.	40	3kg	1 hour	Slow
H	40	Handwash Wool	40	1kg	45minutes	Slow
J	30	Silks	30	3kg	55minutes	Gentle
K	30	*Fast Wash*	30	3kg	30minutes	Slow
L		Handwash	25	3kg	45minutes	Gentle
M		Drying Programmes	Options: Select High Heat for Cottons. Max 180 minutes.			
Rinse and Spin		Mixed		3kg	30minutes	Slow
Fast Spin		Cotton		6kg	15minutes	Fast
Slow Spin		Delicates		3kg	13minutes	Slow
Pump Out		All			2minutes	

Controls Information

A single control board located at the back of the machine contains all the circuitry to control the machine and interfaces with the programme selector, option buttons and LEDs located on the console panel. The control board has an access port to the rear of the machine to enable programming and diagnostic checks to be carried out.

Programmes are selected by turning the rotary switch to one of the 16 positions a rotary switch. Special options can be selected by pressing the appropriate buttons and the programme process followed by LEDs.

The machine is switched on using the On/Off button and selected programmes started by pressing the Start/Cancel button.

Automatic Features

Auto Half Load

Auto half load adjusts the amount of water in the wash load depending on the absorbency of garments in the wash load.

Fabric Conditioner Dispensing

Dispensing of fabric conditioner is achieved by energising both the Pre-Wash and Main Wash cold valves.

Out of Balance Protection

The machine has an inbuilt feature to prevent spinning with an unbalanced load. A calculation via the motor tacho and control board detects the current drawn by the motor during distribution.

Before each spin, the controls senses the load within the drum and if the load is calculated to be out of balance the machine will not automatically spin to the full speed.

There are two levels of out of balance, level 1 @ 480 grams and level 2 @ 1030 grams.

If the out of balance is below level 1 the machine will spin at full speed, if between level 1 and level 2 the machine will spin at the reduced speed of 600 rpm and above level 2 spin at reduced speed of 400 rpm. There are 15 attempts at level 1 with 57 attempts in total, this being the same for both cotton and synthetic spins.

The wool spin has one level of out of balance @ 1.8 kg. The controls will make three attempts to achieve a balance, if after three attempts a balance is not achieved; the spin is reduced to a speed of 90 rpm.

The Condenser Tumble Drying Process

The drying process is by means of a closed air system driven by a circulating fan. Air is drawn internally from the rear of the outer drum, passed over a heating element and returned to the front of the drum via an inlet through the door seal. The warm air travels through the wash load collecting moisture, the moist air then condenses on a stream of cold water running down the inner rear section of the outer drum. The relatively dry air is then drawn back over the element to repeat the process.

The circulating fan, one shot cut-out or thermal fuse cable along with a thermistor to control the air temperature are located in a heater box assembly attached to the top of the outer drum.

The airflow passes through a filter located within the air duct from the outer drum to the heater box assembly. At the start of every drying program the filter is automatically cleaned by flushing water through it by means of a fill valve wired in parallel with the hot fill valve for 5 seconds duration.

On products produced from April 2005, Date Code 40, the filter flushing hose was deleted.

On products produced from May 2006 (S/N 60508.0000) the flushing valve system was re-introduced, but now controlled by the Eeprom using a separate valve located next to the fill valve.
See Notes on page 4.

The water supply for the condenser is by means of a direct feed from a cold inlet valve to the rear of the outer drum and is pumped out approximately every 30 seconds.

The closed air system is sealed by a 'P' trap located within the dispenser inlet hose.
The hose is topped up with cold water every 8 minutes for a duration of 1 second.

There are two heat settings, high and low heat. The default setting is low heat, High Heat is selected by means of a push button on the console. The drying time is selected by means of a rotary switch also located on the console. The drying times are followed by a 20 minute cool tumble.

Thermal Spin

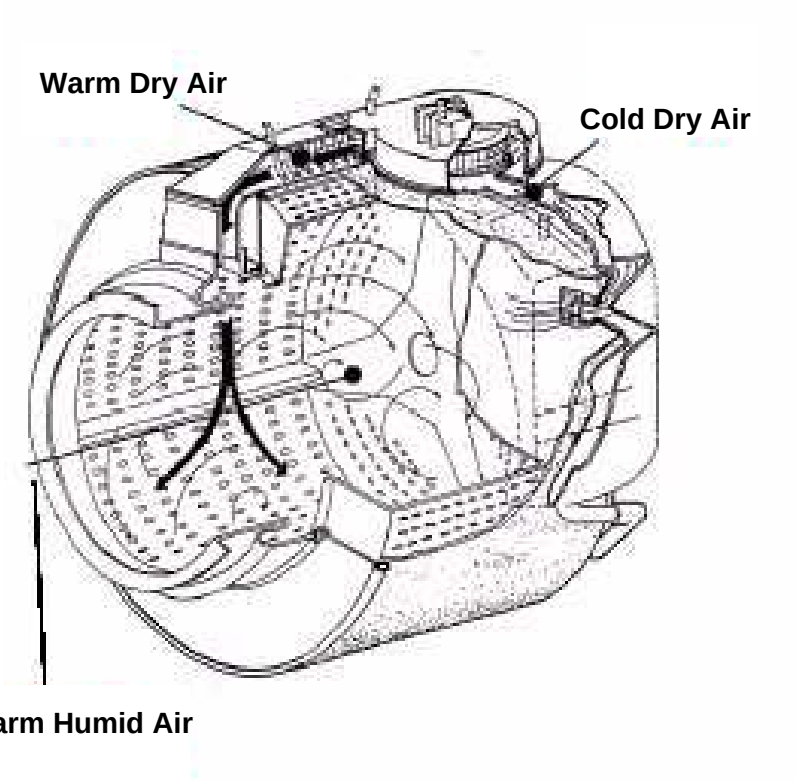
A thermal spin on the High Heat setting is carried at the start of the of the drying process. The load is pre-heated to approximately 50°C by the dryer heater with normal tumble action and pump out. The thermistor located in the wash heater will sense the load temperature and when 50°C is achieved a 5 minute Spin profile will be carried out at full spin speed.

During thermal spin the out of Balance detection will operate and maximum speed will only be achieved depending on the out of balance condition.

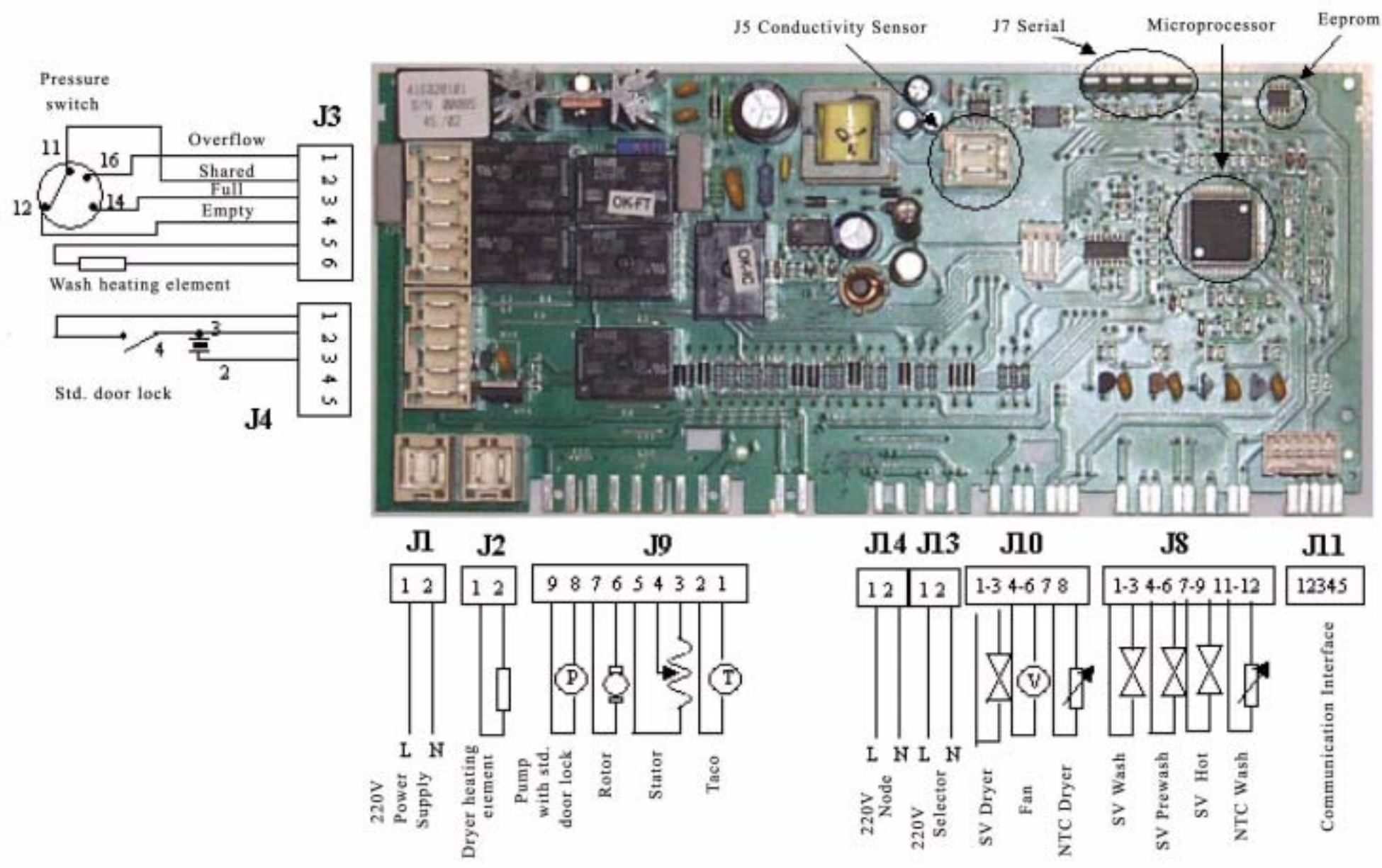
On completion of the Thermal Spin, the tumble drying process will commence for the period of time selected.

Thermal spin is NOT available when low heat is selected.

Airflow Diagram

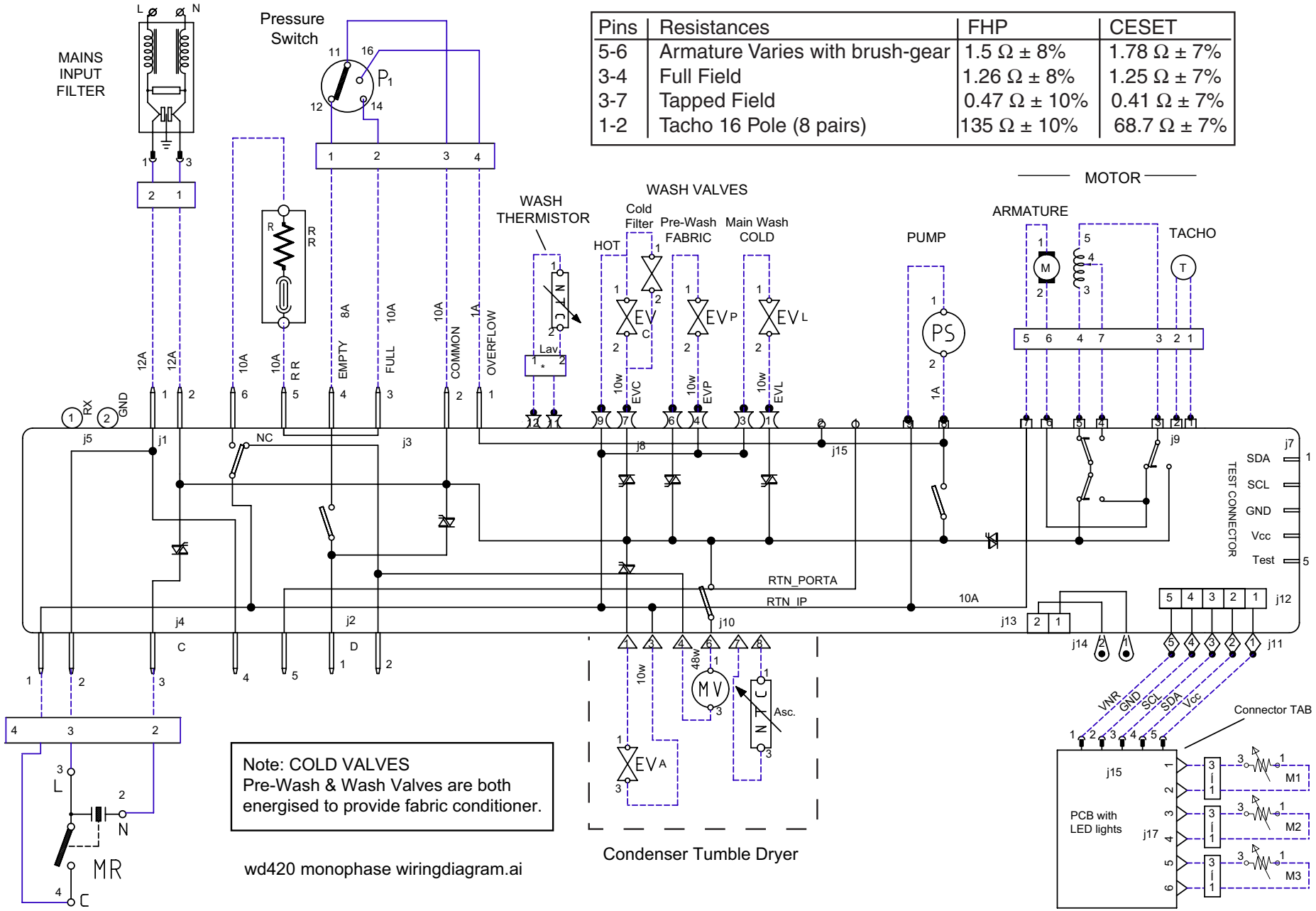


Wiring Connections - Before Date Code 40

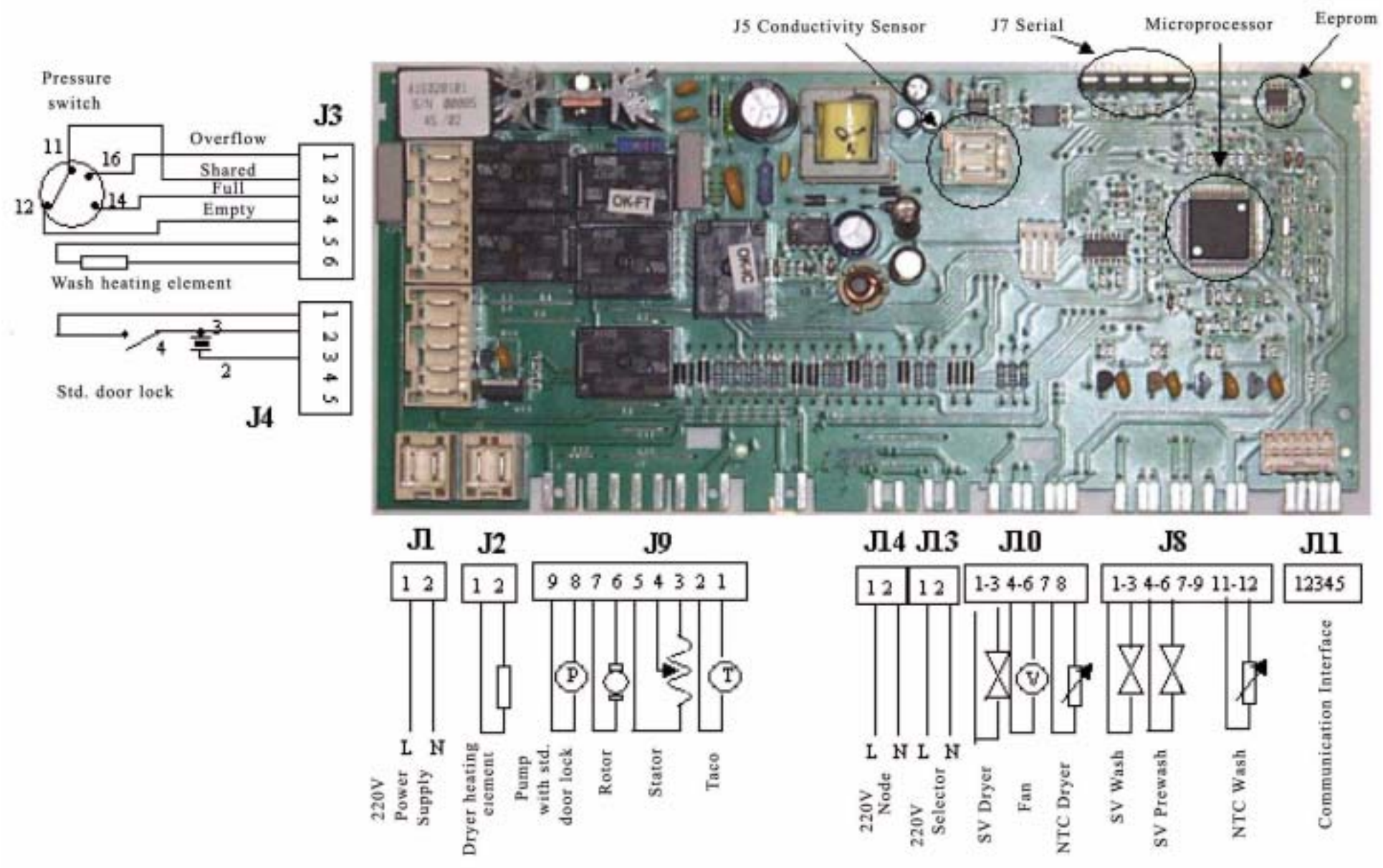


Wiring Diagram - Before Date Code 40

Pins	Resistances	FHP	CESET
5-6	Armature Varies with brush-gear	1.5 Ω ± 8%	1.78 Ω ± 7%
3-4	Full Field	1.26 Ω ± 8%	1.25 Ω ± 7%
3-7	Tapped Field	0.47 Ω ± 10%	0.41 Ω ± 7%
1-2	Tacho 16 Pole (8 pairs)	135 Ω ± 10%	68.7 Ω ± 7%

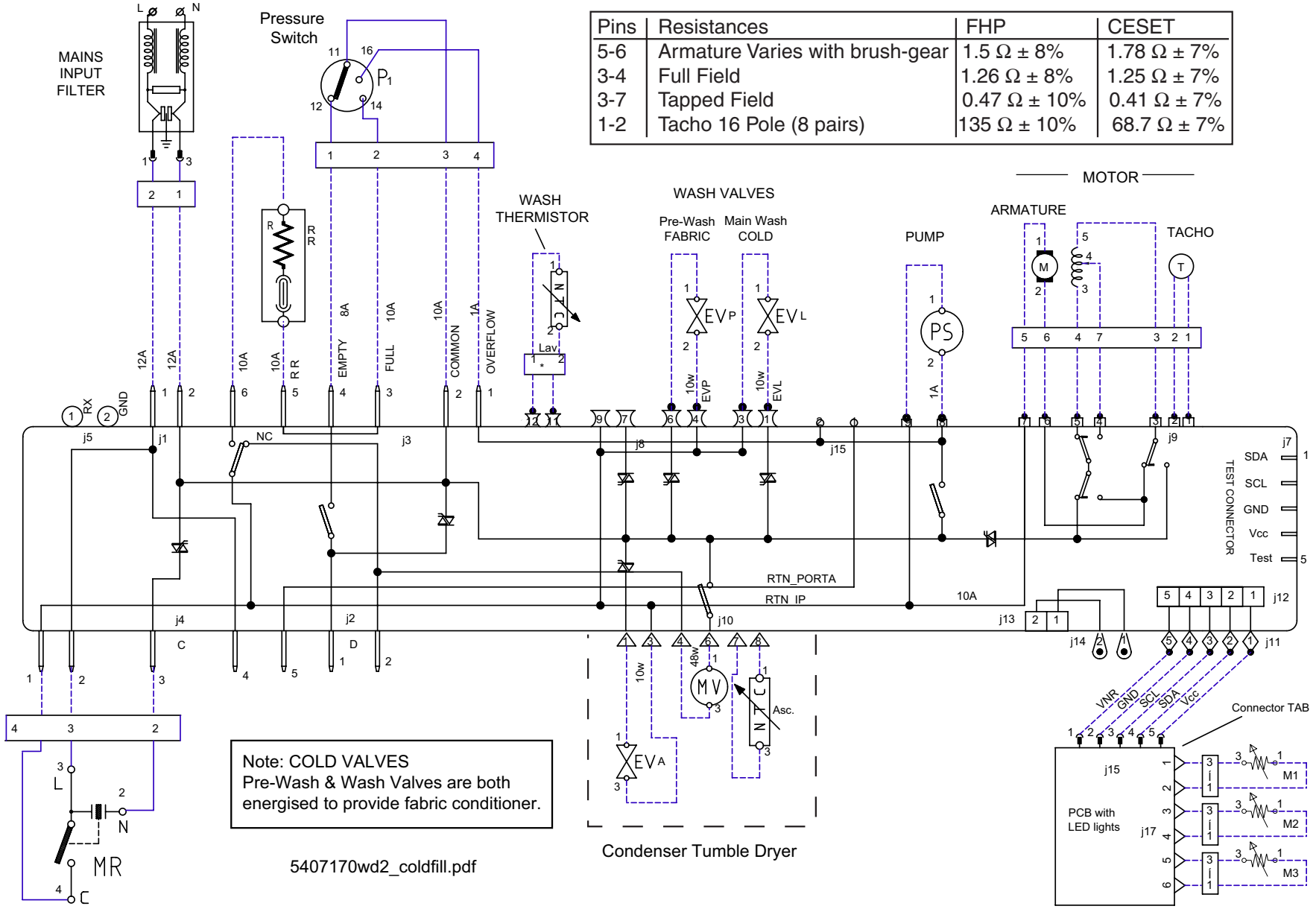


Wiring Connections - After Date Code 39



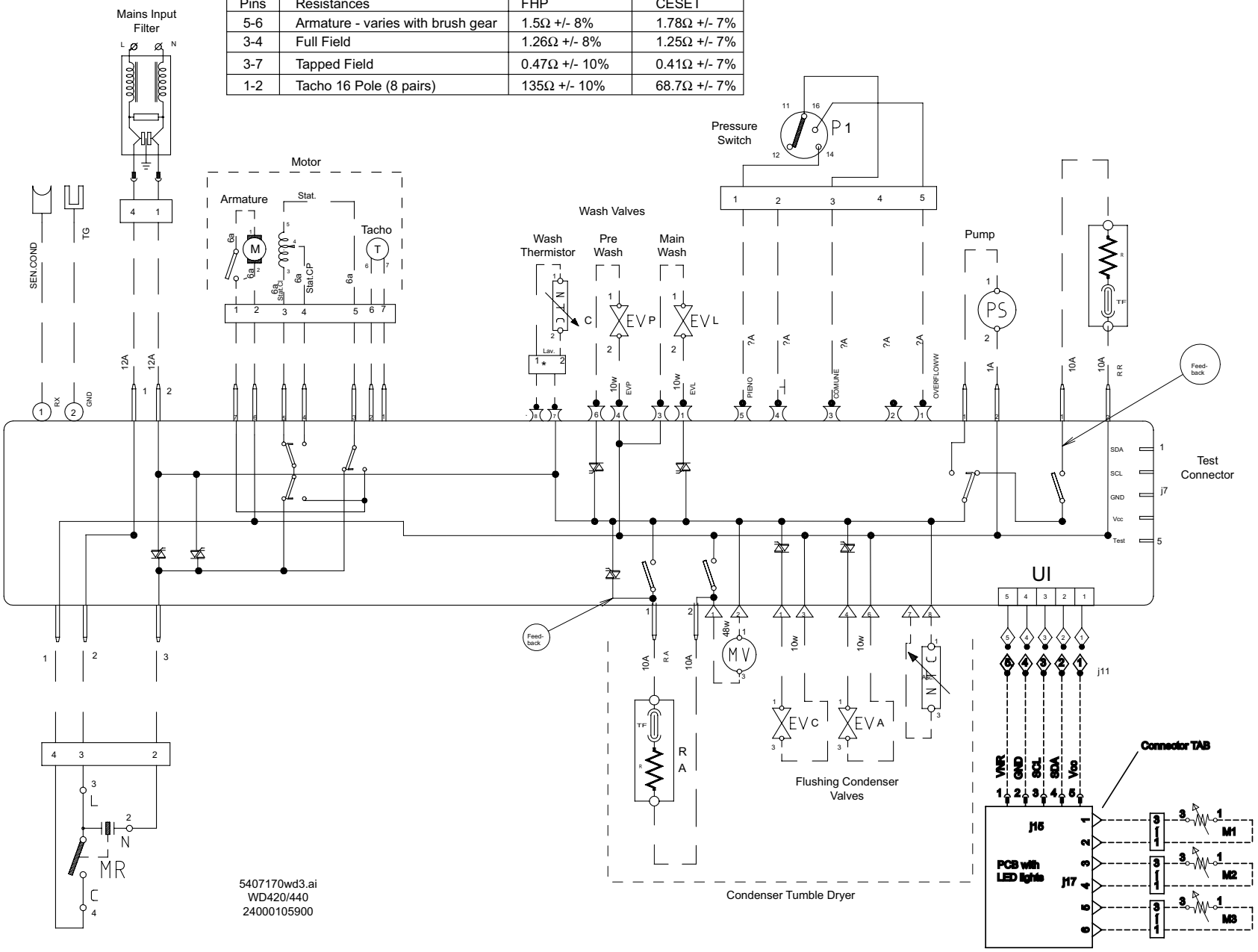
Wiring Diagram - After Date Code 39

Pins	Resistances	FHP	CESET
5-6	Armature Varies with brush-gear	1.5 Ω ± 8%	1.78 Ω ± 7%
3-4	Full Field	1.26 Ω ± 8%	1.25 Ω ± 7%
3-7	Tapped Field	0.47 Ω ± 10%	0.41 Ω ± 7%
1-2	Tacho 16 Pole (8 pairs)	135 Ω ± 10%	68.7 Ω ± 7%



Wiring Diagram - After Serial Number 60508.0000

Pins	Resistances	FHP	CESET
5-6	Armature - varies with brush gear	1.5Ω +/- 8%	1.78Ω +/- 7%
3-4	Full Field	1.26Ω +/- 8%	1.25Ω +/- 7%
3-7	Tapped Field	0.47Ω +/- 10%	0.41Ω +/- 7%
1-2	Tacho 16 Pole (8 pairs)	135Ω +/- 10%	68.7Ω +/- 7%



Wiring Diagram Legend

AQS	Aquastop solenoid valve	N	Neutral or Terminal board
B	Buzzer or Door lock	NC	No spin
BF	Terminal board contacts, dryer heating element and	P	Pressure switch
BP	Door lock	P1	Pressure switch 1st level
C	Condenser	P2	Pressure switch 2nd level
AC	Condenser	PA	High speed potentiometer
DV	Switch	PB	Low speed potentiometer
EF/CL	Cold water/bleach solenoid valve	PL	Pure wool
EF/L	Cold water/wash solenoid valve	PM	Motor thermoprotector
EF/P	Cold water/prewash solenoid valve	PR	Timer programmer or Pressure switch
ER	Cut-out heater	PS	Drain pump
ET	Cut-out thermostat	R	Heating element
EV	Solenoid valve	Ras/RA	Drying heater
EVA	Drying solenoid valve	RE	Relay
EVC	Hot water solenoid valve	RR	Heating element
EVF	Cold water solenoid valve	RV	Speed regulator
EVL	Wash solenoid valve	S	Indicator light
EVP	Prewash solenoid valve	SL	Line indicator light
FA	Noise filter	SO	Door indicator light
FD	Delicate drying thermostat	SR	Heating indicator light
FE	Intense drying thermostat	ST	Temperature selector or Stop with water
FRT	Thermofuse resistance	SV	Spin speed selector
I	Reverser	T	Timer contacts
I1..I2..3.	Switches/deviators	TA	Drying timer contacts
IA	On/Off switch	TB	Low temperature thermostat
IC	Switch NC / 1/2 load	TC	Crosspiece earth
ID	No spin switch	TFL	Flange earth
IE	Water-economizer or NC Switch	TG	Main earth
IF	Spin decrease switch	TH	Thermostat
IP	Door switch	TH1	Thermostat 1st temperature
IR	Line switch	TH2	Thermostat 2nd temperature
IS	Water-stop	TH3	Thermostat 3rd temperature
L	Line or Lamp	THF	Work thermostat
LB	Low level	THR	Adjustable thermostat
LN	Normal level	TM	Motor earth
LS	Indicator light	TMB	Base cabinet earth
M	Earth symbol or Dryer motor	TMP	Motor thermoprotector
MC	Spin motor or Spin winding	TMS	Thermostop
MI	Induction motor	TP	Thermoprotector or Pump earth
ML	Wash motor or Wash winding	TPS	Drain pump earth
MO	Terminal board	TR	Heating element earth
MP	Door microswitch	TS	Safety thermostat or Support earth
MR	Microdelay device	TT	Timer earth
MT	Timer motor	TTH	Thermostat earth
MV	Fan	TV	Tub earth
MV - Ras	Dryer fan (RA)	ZBN	Timer
Mzbn/M	zbn timer motor		

Auto Test Setup

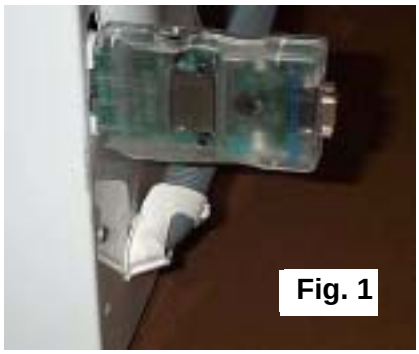
An error test programme can be carried out using Hardware Key Part No. C00095669 which is inserted into the socket at the rear of appliance and connects to the Power Module.

The Hardware Key can be used on Vogue 4 EVO 2 model Washing Machines and Washer Dryers.

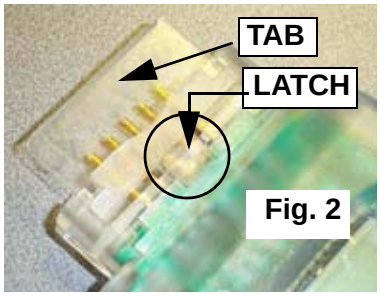
TEST SETUP & INDICATIONS

1. Ensure the machine is switched off and remove the serial port cap.
2. Insert Hardware Key into socket at the rear of the machine with the plastic pin protection tab fully extended. If it has been removed it should be refitted before use. Refit Tab with latch uppermost. See Fig. 2.
   Switch the machine on and verify model type by observing the LED colour displayed on the key as indicated below:-
   Flashing Red = Slow flashing indicates a good connection of Hardware Key into the module. Rapid flashing indicates a poor connection. If this isn't displayed it will not work.
   Constant Blue = EVO 2 model.
3. The selector can be in any position.
4. Press the AUTO TEST button on the Hardware Key. 'Auto Test' will scroll across the key LCD display and a beep is heard from the key. If the Programme Selector is motorised it will advance to another position after a 10 second pause (this is normal).
5. The Test Programme will now commence.
6. If there is a fault on the machine it will be indicated by a fault code in the Hardware Key LCD display. Refer to Fault Codes section.
7. The fault must be cleared before the appliance or self test will run again correctly. (See Notes on following page.)

Hardware Key shown fitted

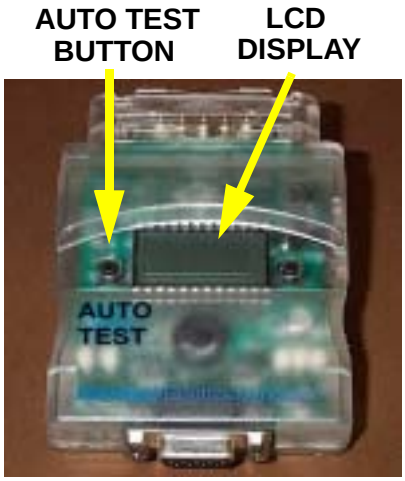


Pin protection Tab shown fully extended



TEST SEQUENCE

a) Fills through main wash valve - approx. 10 seconds.
b) Fills through pre - wash valve - approx. 10 seconds.
c) Fills through hot valve (if fitted) - approx. 10 seconds.
d) Fills through main wash and pre - wash valves together (fabric conditioner function) to pressure switch level.
e) Tumbles and heats to 30 °C
f) Drain and spin.
g) Dryer motor and dryer heating element activated.
h) Machine now resets and a beep is heard from the Hardware Key.
i) Switch off machine and remove the Hardware Key. Replace the serial port cap and secure with screw if fitted.



continued overleaf ...

Notes:
When first starting a test, a fault code could immediately appear since the Hardware Key will detect the last fault the machine had in the past.

In this situation it will be necessary to proceed as follows:

Switch off and unplug from the power supply for 30 seconds and re-start test.

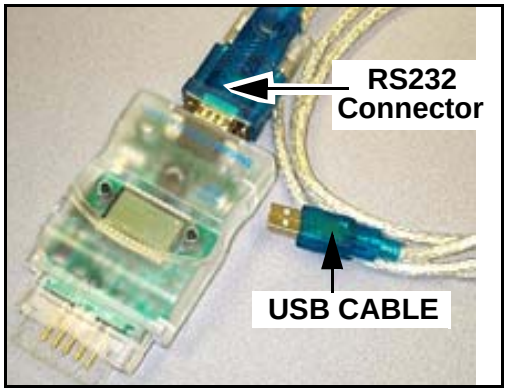
Faults Without Error Codes

If the motor is open circuit the machine will not fill or operate.

USB CABLE

This Hardware Key is supplied as part of a kit (Part No. 5600260) which includes a USB to RS232 serial cable.

This is used in conjunction with the Washing Machine Doctor diagnostic programme installed on EMIT units.



EEPROMS & DIAGNOSTICS

Three variations of Eeprom can be found or used on Power Boards:

1. Production Power Boards have a soldered Eeprom and is not replaceable.
2. Service Power Boards have a socket and the Eeprom is a separate part.
3. Blank Eeproms.

All types can be programmed or re-programmed via Emit, using a USB lead, Hardware Key and the relevant Eeprom Writer software. Certain models which have a combined Power and Display board also require an Adapter fitted between the Hardware Key and the Power Board.

Information can be found in Service Manual 5407177 and Quick Guide 5407200.

The Main Components are shown below.

Fig. A

Fig. A C00115587 Hardware Key
Fig. B C00116135 Low End Adapter
Fig. C 5600261 USB Cable

A Hardware Key Pin Repair Kit is also available which contains five pins. Part Number C00114723.

DIAGNOSTICS

Two versions of a diagnostic programme are available to use after an Eeprom has been replaced or programmed and for general fault finding. Connection to the appliance is the same as for Eeprom Writer.

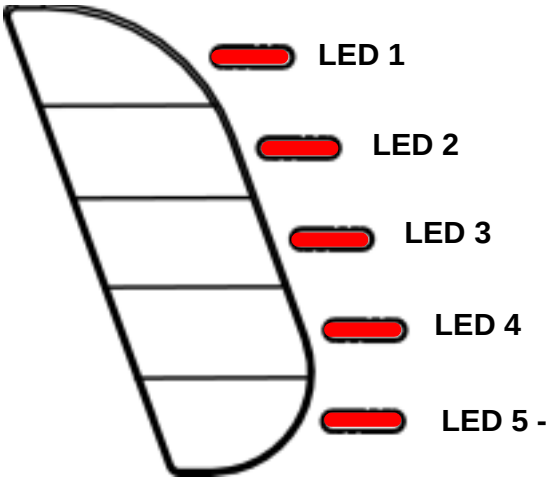
1. Washing Machine Doctor 1 for Evo 1 based appliances.
2. Washing Machine Doctor 2 for Evo 2 based appliances.

Information can be found in Service Manuals 5407180 and 5407182 respectively.

Note: This version of the Hardware Key, Eeprom Writer and Washing Machine Doctor programmes are only available to Indesit Company Engineers.

Pre-programmed Eeproms and Service socket boards are available for repairs and Spare Parts.

Error Codes & Possible Causes



When an error occurs, the On/Off LED flashes rapidly and one or more of the Option LEDs will flash once per second

Refer to the chart below for error code definitions.

LCD Display Code	Console LEDs					Possible Causes & Actions
	LED 1	LED 2	LED 3	LED 4	LED 5	
F01	OFF	OFF	OFF	Flash	OFF	**Motor triac short circuit:** check motor & module connections
F02	OFF	OFF	Flash	OFF	OFF	**Motor jammed / tacho detached:** check motor & module connections
F03	OFF	OFF	Flash	Flash	OFF	**NTC short/open circuit:** check thermistor & module connections
F04	OFF	Flash	OFF	OFF	OFF	**Pressure switch jammed on empty:** check switch & module
F05	OFF	Flash	OFF	Flash	OFF	**Pressure switch jammed on full or pump blocked:** check pump & switch
F06	OFF	Flash	Flash	OFF	OFF	N/A
F07	OFF	Flash	Flash	Flash	OFF	**Heater relay stuck:** check heater and module connections
F08	Flash	OFF	OFF	OFF	OFF	**Heater relay stuck:** check pressure switch, heater & module connections
F09	Flash	OFF	OFF	Flash	OFF	**Setup error:** check eeprom
F10	Flash	OFF	Flash	OFF	OFF	**Pressure switch not sensing:** check switch & module connections
F11	Flash	OFF	Flash	Flash	OFF	**Pump cannot be activated:** check pump, connections & wiring
F12	Flash	Flash	OFF	OFF	OFF	**No communication between cards:** check module connections
F13	Flash	Flash	OFF	Flash	OFF	**High Temperature Rise in Drying:** Reduced airflow, check fan motor & filter for blockage.
F14	Flash	Flash	Flash	OFF	OFF	**No Heat when Drying:** Check one shot thermostat, heater & module connections
F15	Flash	Flash	Flash	Flash	OFF	**Drying Heater Relay Fault:** Possibly open circuit.
F16	OFF	OFF	OFF	OFF	Flash	N/A
F17	OFF	OFF	OFF	Flash	Flash	**Door lock error:** check door, door lock & module connections
F18	OFF	OFF	ON	OFF	OFF	**Fault on Control Board:** Check for damaged EEprom and Microprocessor

Note:
LCD display codes shown below are found on the Auto Test Plug Display - not on the machine.

Dismantling Instructions

Safety Notes

1. **Ensure that the appliance is disconnected from the electrical supply before dismantling.**
2. **Beware of sharp edges on metal panels, plastic mouldings, and pressed parts.**
3. **Some fixings (especially those into plastic) must be tightened to the correct specification using a suitable torque wrench.**
4. **Insulation resistance tests must be carried out with the pressure switch set to ensure that the water heater is 'in-circuit' during the test.**

A Table Top

1. Remove the two screws at the top rear of cabinet.
2. Slide the table top backwards to disengage the location fixings at the rear and lift off.

B Lower Rear Access Panel

1. Remove three screws from the lower rear access panel.
2. Pull the top edge of the panel out and disengage it from its location fixings along the bottom.

C Dispenser Drawer

1. Open the dispenser drawer fully.
2. Press release latch in centre of drawer and pull drawer body and pull drawer away from console.

D Console Panel

1. Remove the table top (A) and dispenser drawer (C).
2. Remove two top screws securing console to cabinet and two screws securing console to dispenser.
3. Unplug wiring from console PCB - taking note of position.
4. Slide dispenser back.
5. Unclip two plastic lugs securing console panel to front panel and lift clear.
6. Avoid unclipping and handling the control board unless absolutely necessary, as the control board is susceptible to static electricity.

E Console PCB and Button Assemblies

1. Remove the console panel (D).
2. Remove wiring plug - taking note of position.
3. Remove three securing clips and lift away from the console.

F(a) Pressure Switch

1. Remove the table top (A).
2. Disconnect the wiring connection block and pressure hose.
3. Carefully unclip bracket from cabinet side and then unclip switch from bracket.

F(b) Front Panel

1. Remove the table top (A), dispenser drawer (C) and console panel.
2. Remove the door seal restraint (G) and door interlock (H).
3. Grip the appliance kickstrip at both ends and pull it off in a forward direction.
4. Remove 4 front panel fixing screws (2 bottom, 2 top).
5. Slide the dispenser housing backwards so that it clears the console backplate opening.
6. Lift the front panel upwards to disengage the four cabinet fixing pegs and lift off.

G Door Seal & Restraint:

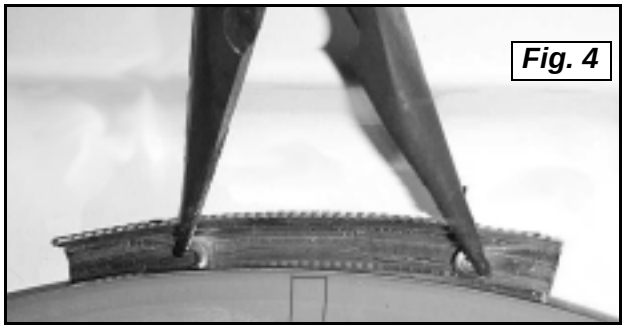
1. *Door Seal to Front Panel Fixing*

The door seal is fixed to the cabinet front panel by a wire clamp and a small spring. The spring is normally at the bottom of the door.
Carefully place a small screwdriver into one of the lugs of the spring and by stretching the spring the wire band can be removed.

2. *Drum Fixing*

The door seal is fixed to the drum with a zipper retainer. After removing the front panel (Fb) remove the zipper as shown in Fig. 3 below.

On refitting place the strap around the door seal and tighten as shown in Fig. 4. Observe correct seal and zipper fixing positions as shown in Fig. 5.



Seal to Drum fixing position

H Door Interlock

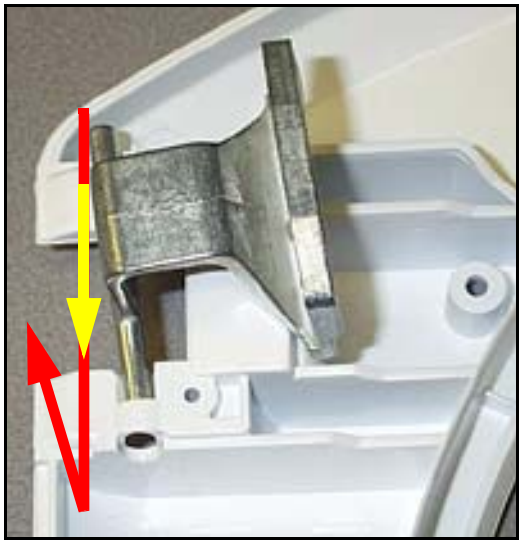
1. Remove the door seal restraint (G).
2. Peel the door seal off the front panel, and fold it back into the inner drum.
3. Remove two screws from the interlock.
4. The interlock can now be eased out, allowing access to the wiring connection block.
5. Care must be taken to ensure the correct orientation of the wiring connection plug to prevent seriously damaging the interlock and / or control board.

I Door Assembly

1. Open the door through 180° and remove four screws securing the hinges to the front panel. Ease the hinges from the panel.
2. The door trims can now be split. Lay the door assembly face down on a suitably protected surface and remove 6 screws securing the two halves of the door.
3. Unclip the two halves at the hinge end and separate a sufficient distance to slide out the door glass.
4. When removing the hinges, note the orientation. To remove, fold hinges inward, slide towards each other to release other end. See photo. Reassemble in reverse order.
5. To fully separate the halves, slide the front away from the handle.
6. To remove the handle or latch, slide securing pin out noting the position of the spring and latch.

Top Hinge removal (shown below) -
Slide towards lower hinge, twist to the left and slide up to release.

Lower Hinge removal - Slide upwards, twist to the right and slide down to release.



J Front Panel

1. Remove the table top (A), dispenser drawer (C) and console panel (D).
2. Remove the door seal restraint (G) and door interlock (H).
3. Grip the appliance kickstrip at both ends tilt forwards, and pull it off in a forward direction.
4. Remove 4 front panel fixing screws (2 bottom and 2 top).
5. Slide the dispenser housing backwards so that it clears the console backplate opening.
6. Lift the front panel upwards to disengage the four cabinet fixing pegs, and lift off.

K Door Seal

1. Remove the table top (A), dispenser drawer (C) and console panel (D).
2. Remove the door seal restraint (G), door Interlock (H) and front panel (Fb).
3. Remove the drum door seal restraint (G) and lift clear.
4. Disconnect the door seal from the heater box.

L Drive Belt

1. Remove the table top (A).
2. Remove the lower rear access panel (B).
3. Carefully peel the belt off the motor pulley taking care not to trap fingers and using suitable protection against sharp edges.
4. To refit the belt, place it round the motor pulley first, tie-wrap the belt onto the drum pulley, and rotate the drum from the door aperture to move the belt into position.
5. Ensure any remaining tie-wraps are removed.
   It is essential for continued safety that only a genuine spare is fitted. The belt is electrically conductive and provides an electrical earth to prevent static built up on the inner drum assembly.

M Motor

1. Remove the lower rear access panel (B) and drive belt (L).
2. Disconnect the motor wiring connection plug and earth wire.
3. Using a 13 mm socket or ratchet ring spanner, remove both motor mount fixing screws.

4. Ease the motor off the drum mountings.
5. Prior to refitting the motor, ensure that the drip shield and mounting-bush are not worn or damaged.

N(a) Lower Balance Weight

1. Remove the table top (A), dispenser drawer (C) and console panel (D).
2. Remove the door seal restraint (G), door Interlock (H) and front panel (Fb).
3. Using a 13 mm socket or spanner, remove three balance weight fixing screws.
4. Pull the weight forward off its mounting lugs.
5. When refitting the balance weight it is essential to ensure that the thread forming screws are tightened to 24Nm (using a suitable torque-wrench) and that the screws find their original threads, otherwise the thread can be stripped from the plastic drum lug.

N(b) Top Balance Weight

1. Remove the table top (A).
2. Using a 13mm socket or spanner, remove three balance weight fixings screws.
3. Lift the weight off the drum mountings.
4. When refitting the balance weight it is essential to ensure that the thread forming screws are tightened to 18Nm (using a suitable torque-wrench) and that the screws find their original threads, otherwise the thread can be stripped from the plastic drum lug.

P Heater / Thermistor

1. Remove the rear lower access panel (B).
2. Remove the heater wiring and detach the thermistor plug.
3. Slacken off the 10 mm heater fixing nut and withdraw the heater from the drum.

Q Drum Pulley

1. Remove the rear lower access panel (B).
2. Carefully peel the belt off the motor pulley taking care not to trap fingers.
3. Using a 13mm socket or spanner, remove the fixing bolt in the centre of the pulley.
4. Pull the pulley off the drum shaft.
5. To ensure adequate pulley security always fit the correct pulley bolt (high tensile with dog-point). If refitting the original bolt apply an engineering Nutlock (Part No. 981009) to the bolt threads.

R(a) Suspension Damper

1. Remove two suspension clamp fixing screws and unclip the clamp from the chassis.
2. Remove the table top (A), dispenser drawer (C) and console panel (D).
3. Remove the door seal restraint (G), door interlock (H) and front panel (Fb).
4. Remove the lower balance weight (Na) if access is required to the left-hand damper.
5. Unclip any wiring retained within the integral clip on the bottom damper moulding.
6. Remove the plastic peg securing the damper to the outer drum using special tool Part No. 5600198.
7. Withdraw the suspension damper. The unit should not be split and is not serviceable.
8. When reassembling, fit a new plastic peg if the locking-tab on it shows signs of damage.

R(b) Suspension Spring

1. Remove the table top (A).
2. Unclip any wiring retained within the integral clip on the spring bearing keeper plate.
3. Gently lever out the bearing keeper plate with a small flat bladed screwdriver.
4. Unhook the spring from the cabinet top rail bearing.

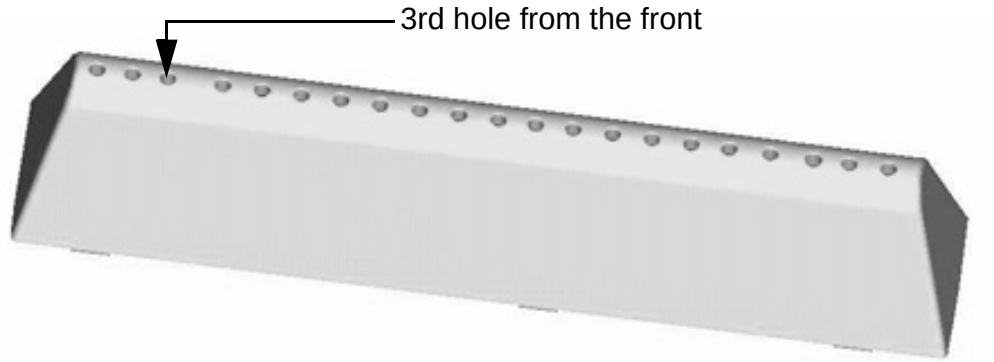
S Dispenser

1. Remove the table top (A) and dispenser drawer (C).
2. Remove two screws around the dispenser recess and two screws from valve support panel.
3. Ease the dispenser backwards to unclip it from the cabinet top rail.
4. Remove the dispenser outlet hose, and any harness retention ties.

T Drain Pump

1. Remove the lower rear access panel (B).
2. Detach the sump hose from the pump using a suitable container to catch any water.
3. Disconnect the drain hose from the pump and unplug the wiring connection block.
4. Lift plastic the locking tab and slide the pump inwards and lift clear.

U Inner Drum Lifter



1. Insert a small screwdriver onto the 3rd lifter hole from the front of the drum. This will depress the drum flap securing the lifter.
2. Slide the lifter to the front of the drum and remove.
3. Before refitting, lift the drum locking tab 3 mm above the drum surface.
4. Offer the lifter to the holes in the drum, slide lifter to the back of the drum until a click is heard as the lifter is locked into place.

V Heater Box / Drum Assembly

1 Disconnect cable connections to motor, heater, thermistor and thermostat / thermal fuse cable.

2 Disconnect tie-wrap fixing heater box assembly to the door seal.

3 Disconnect filter flushing hose (if fitted).

4 Remove five Torx T30 screws fixing heater box assembly to outer drum and lift away.

Note: On re-assembly fix screws in front to rear order, torque setting for screws 12 Nm.

V (a)Fan Motor

1 Disconnect cables to the motor, heater, thermistor and thermostat.

2 Remove the seven Torx T20 screws holding top and bottom sections and lift top section away.

3 Remove fan from motor shaft by unscrewing 11 mm nut.

Note; this is Left Hand Thread.

4 Remove the four fixing screws and release motor. (From Serial Number 60508.0000 the motor fixing screws are external to the heater box casing.)

Note: On re-assembly the fan must have a clearance of approximately 2 - 3 mm from the inside of the top section. Use nutlock 242 (Part No. 981009) on thread of fan nut.

V (b)Heater

1 Remove top section as in V (a) 1 - 2.

2 Release heater by removing the two 19 mm nuts.

V (c) One Shot Cut-Out

1 Remove top section as in V (a) 1 - 2.

2 Remove heater as in V (b) 1 - 2.

3 Remove screw holding heat shield to top section.

4 Remove two screws fixing cut-out to top section.

Thermal Fuse Cable - From Serial Number 60508.0000
To remove: Disconnect the thermal fuse from the heater / loom end. Remove the thermal fuse cable clamp.

W(a) Drum Assembly

1. Remove the table top (A).
2. Remove the top balance weight (Nb).
3. Remove heater box assembly (V).
4. Remove the dispenser drawer (C).
5. Remove the console panel (D).
6. Remove the dispenser (S).
7. Remove the front panel (Fb).
8. Remove the lower balance weight (Na).
9. Remove the lower rear access panel (B).
10. Remove the motor (M).
11. Detach the drum from the damper units by removing the two plastic pegs using special tool Part No. 5600198.
12. Remove the sump hose fixing clip and detach the sump hose from the sump chamber.
13. Disconnect heater / thermistor wiring and release the wiring harness from the drum clips.
14. Unclip any wiring retained within the integral clip on the spring bearing keeper plates.
15. Gently lever out the spring bearing keeper plates with a small flat bladed screwdriver.
16. Unhook springs from the cabinet top rail bearings.
17. Carefully lift the drum assembly out of the cabinet.

W(b) Inner Drum & Support Assembly / Drum Seal / Outer Drum Halves

1. Remove the drum assembly (Va).
2. Remove the drum pulley (Q).
3. Loosen the inner drum assembly by tapping the drum shaft with a soft copper hammer or by inserting a pin punch into the shaft hole and tapping with a copper hammer.
4. Remove sixteen T30 Torx head drum fixing screws and detach the drum front.
5. Lift out the inner drum and support assembly.
6. The inner drum and support are not designed to be separated, and must be replaced as an assembly if required.
7. Always fit a replacement drum seal if the drum has been split and ensure that the seal joint is at the top. When reassembling the drum halves it is essential to ensure that the thread forming screws find their original threads, otherwise the thread can be stripped from the plastic drum lugs. Retighten the drum joint fixing screws to 8Nm (using a suitable torque-wrench).

X Cabinet

1. Remove the table top (A).
2. Remove the dispenser drawer (C) and console panel (D).
3. Remove the front panel (Fb).
4. Remove the lower balance weight (Na).

5. Remove the lower rear access panel (B).
6. Remove the motor (M).
7. Remove the top balance weight (Nb).
8. Remove the drum assembly (Va).
9. Remove the drain pump (T).
10. Unscrew feet, remove the wheels, and remove hose clips from the rear of the cabinet.

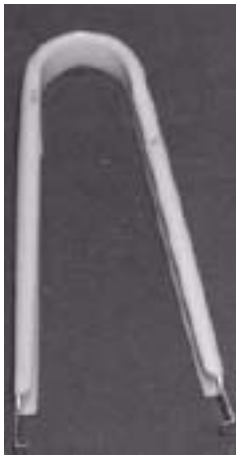
Y Power / Control Module!

1. Remove back panel (B).
   Ensure the electrical supply is disconnected. See notes on Page 2.
2. Remove screw or screws securing module support to the cabinet.
3. Disconnect wiring.
4. Lift module and support clear.
5. When replacing the board an EEProm will also be required - refer to following page.

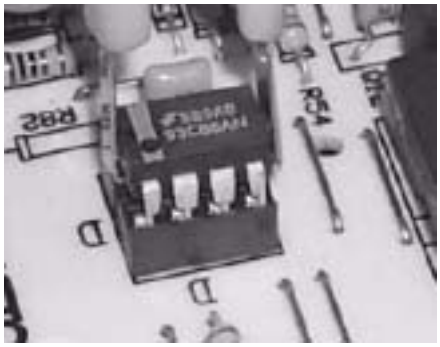
   Note: To remove and fit the EEProm use Insulated Tweezers Part No. C00066292 as shown below.

   On the original control board, the EEProm may be soldered to the board and cannot be removed.

IC Removal Tool



EEPROM Removal from PCB

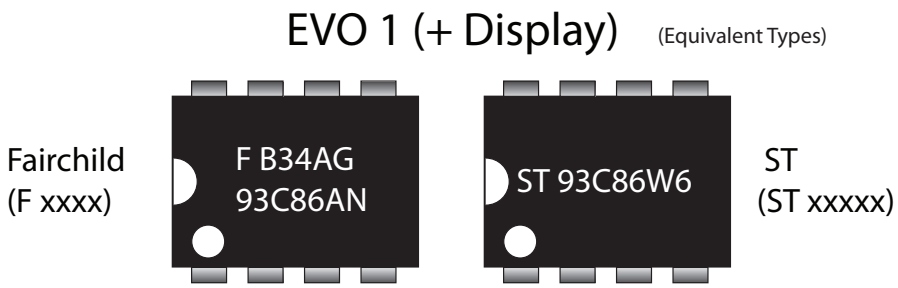


EEPROMS

There are two versions of Eeprom EVO1 and EVO2 and they are not interchangeable. They match the version of software fitted on production to an appliance.

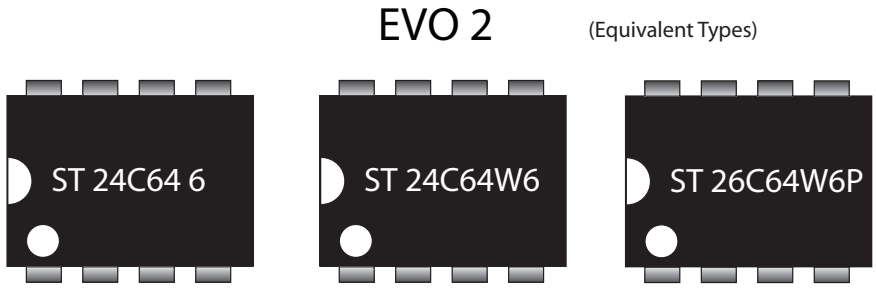
Before programming a blank Eeprom via E-mit identify the correct Eeprom before fitting to the Power Board.

(Note: All Display Eeproms are EVO 1 and cannot be programmed via Emit.)



There are two types of EVO1 Eeprom. The original one manufactured by Fairchild, is no longer in production. Eeproms manufactured by ST are used on current production and for spare part requirements.

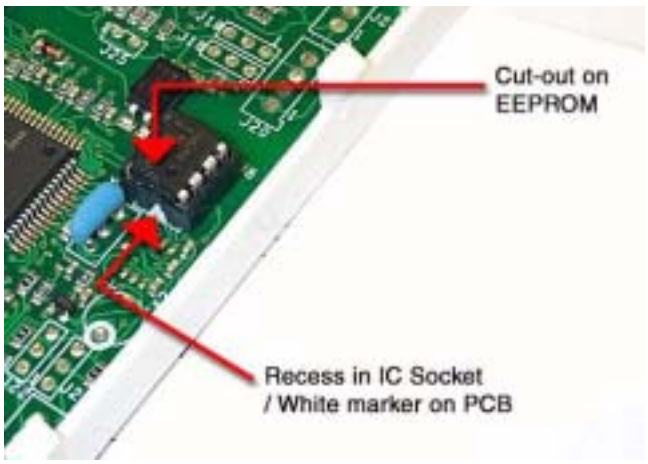
Both types have the above numbers stamped on them to identify and must not be fitted to EVO2 machines.



EVO2 Eeproms are manufactured by ST. These also have a unique identification number as shown. These Eeproms must not be fitted to EVO1 machines.

Fitting

The correct orientation when fitting any version Eeprom is shown below:



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